SystemC CCI WG
Parent Control of Preset Values

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Parent Control of Preset Values

- **The objective of this example is to demonstrate:**
  - Model-to-Model Configuration (UseCase 12)
  - Default and Preset Values (UseCase 3)
  - Name-based Parameter Access (Requirement 1.3)

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Legend Diagram

Module	Color
sc_main()	
top_module	
router	
master	
slave	
tlm2 binding	
Lock Initial Values	
Warning: Setting parameter value twice!!	
Warning: Setting (locked!) parameter value failed!!	

This legend diagram doesn't apply to the *Expected Output* section!!

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Top_Module

Binding and Communication in accordance to TLM2.0 standard

Router

Master#1

Master#n

Slave#1

Slave#2

Slave#n

Number of Master(s) (immutable)
Number of Slave(s) (immutable)

Slave ID (eoe)
Slave Base Addr (eoe)
Slave Size (mutable)

Number of Masters (eoe)
Number of Slaves (eoe)
Max' Addressable Range (mutable)

TOP MODULE will in turn initialize few of the parameters of *ROUTER and* fill the *ROUTER TABLE* contents.
 TOP MODULE *shall* construct the **Model Hierarch**y - *MASTER(S) & SLAVE(S) and ROUTER, overriding* their *default values* wit*h preset values*, thereby demonstrating *Model-to-Model Configuration.*

sc_main() will set preset values for the *TOP MODULE*, max. addressable limit for *ROUTER and fills ROUTER TABLE contents for Slave_1 before* the start of construction of any of the modules via *Name-based Look-Up Access.*

ROUTER TABLE CONTENTS
Filed#1 : Slave#_Index
Field#2 : Slave#_Start_Addrt
Field#3 : Slave#_End_addr
Note: Field contents for Slave_1 have been filled at sc_main() and rest others within top_module

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Inside sc_main()

Set number of masters for the **TOP MODULE**
myGlobalBroker->set_preset_cci_value("top_module_inst.number_of_masters", "2");

Re-Set number of masters for the ***TOP MODULE*** *(to illustrate that the last set value is considered)*
myGlobalBroker->set_preset_cci_value("top_module_inst.number_of_masters", "1");

Set number of slaves for the **TOP MODULE**
myGlobalBroker>set_preset_cci_value("top_module_inst.number_of_slaves", "4");

Override the default maximum set addressable limit of the **ROUTER**
myGlobalBroker->set_preset_cci_value("top_module_inst.RouterInstance.addr_max", "1024");

Set and lock **Router** Table contents **preset values** for **Slave_1**
myGlobalBroker->set_preset_cci_value("top_module_inst.RouterInstance.r_index_1", "1");
myGlobalBroker->lock_preset_value("top_module_inst.RouterInstance.r_index_1");
myGlobalBroker->set_preset_cci_value("top_module_inst.RouterInstance.r_addr_start", "128");
myGlobalBroker->lock_preset_value("top_module_inst.RouterInstance.r_addr_start");
myGlobalBroker->set_preset_cci_value("top_module_inst.RouterInstance.r_addr_end", "255");
myGlobalBroker->lock_preset_value("top_module_inst.RouterInstance.r_addr_end");

Instantiate **TOP MODULE**
top_module top_mod("top_module_inst");

Simualation Starts after construction of the hierarchy
sc_start(1140, SC_NS)

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Within TOP_MODULE

Default Values :
Number of masters : n_masters = 0
Number of slaves : n_slaves = 0

Within CONSTRUCTOR

Set number of masters for the *ROUTER* **and lock them**
myGlobalBroker->set_preset_cci_value("%s.RouterInstance.r_masters", name(), n_masters.get());
   Here, **r_masters** = **1;** *(default value overridden)*
myGlobalBroker->lock_preset_value("top_module_inst.RouterInstance.r_masters");

Set number of slaves for the *ROUTER* **(RouterTable) and lock them**
myGlobalBroker->set_preset_cci_value("%s.RouterInstance.r_slaves", name(), n_slaves.get());
   Here, **r_slaves** = **4;** *(default value overridden)*
myGlobalBroker->lock_preset_value("top_module_inst.RouterInstance.r_slaves");

Used **try-catch** mechanism to set the preset values for the *Router Table*

Slave_size preset value also specified.

Instantiate *ROUTER* instance and fill the *ROUTER TABLE based* on the **Slave_size** preset value (if set)
router routerInstance("RouterInstance");

Binding in accordance to TLM2.0 standard via ROUTER

Construct **MASTER(S) (their number as set within 'sc_main')**

Initializes base address of slave(s) to **router's start address** and finally Cosntructs **Slave(s) (number of slave(s) as set within 'sc_main')**

Try and Set the preset values to **ROUTER TABLE** contents
Setting **Slave_1** contents will result in *failed parameter setting warning* generation
Warning: DEFAULT_BROKER_0: set_preset_cci_value: ... setting failed because preset value is locked!

Within ROUTER

Within constructor

addr_limit =1024 *(already initialized within sc_main)*

r_masters = 1 *(already set and locked by TOP_MODULE)*

r_slaves = 4 *(already set and locked by TOP_MODULE)*

Within 'beoe' phase

Builds the Router Table contents with default values within this phase in case if no preset values were set from the **top_module.**
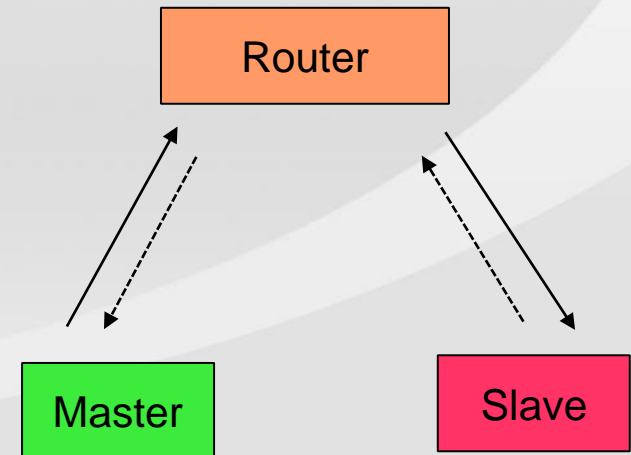
Default Values :
Number of masters : r_masters = 0
Number of slaves : r_slaves = 0
Max' Addressable Limit : addr_limit = 64

TLM2 Communication

Router

Master

Slave

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Expected Output
(ex09_Parent_Control_of_Preset_Values.log)

```
SystemC Simulation

Info: sc_main: [MAIN] : Setting preset value of the number of initiators to 2

Info: sc_main: [MAIN] : Setting preset value of the number of initiators to 1

Info: sc_main: [MAIN] : Setting preset value of the number of targets to 4

Info: sc_main: [MAIN] : Set and lock Router Table target_1 contents

Info: sc_main: [MAIN] : Set and lock Router Table Start Address for target_1 to 128

Info: sc_main: [MAIN] : Set and lock Router Table End Address for target_1 to 255

Info: sc_main: [MAIN] : Instantiate top module after setting preset values to top_module, router and
target parameters

Info: top_module_inst: @0 s, [TOP_MODULE C_TOR] -- [TOP MODULE CONSTRUCTOR BEGINS HERE]

Info: top_module_inst: @0 s, [TOP_MODULE C_TOR] :  Number of initiators : 1

Info: top_module_inst: @0 s, [TOP_MODULE C_TOR] :  Number of targets : 4

Info: top_module_inst: @0 s, [TOP_MODULE C_TOR] : Creating Router : RouterInstance

Info: top_module_inst.RouterInstance: @0 s, [ROUTER C_TOR] ----- [ROUTER CONSTRUCTOR BEGINS HERE] -----
-
```

The remainder of the logfile is interesting but too lengthy to include here; the reader is encouraged to run the example, or examine the golden logfile, to see all of the details.

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